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# CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF AGRICULTURAL ENGINEERING

Vol. 2, No. 9

WASHINGTON, D. C.

April, 1933.

Farm and village housing. Report of the Committee on Farm and Village Housing. Prepared for the Committee by Bruce L. Melvin. Washington, D. C., President's Conference on Home Building and Home Ownership, 1932. 293 p.

This work is the contribution from the Committee on Farm and Village Housing of the President's Conference on Home Building and Home Ownership appointed by President Hoover to "consider the problems of rural housing". Studies subdivided themselves into several major aspects of rural housing including: 1) Research on farm and village housing; 2) design and construction; 3) financing rural home building and remodeling; 4) farmstead planning and beautification; 5) housing and sanitation; 6) housing of special rural groups; 7) special phases of rural housing; and 8) education for better housing on farms and in villages.

Literature on housing has almost completely ignored the point of view of the farm and rural community. And while there has been a rise in standards of rural housing through a closer relationship between city and country, in general the farmhouse is far behind in the essentials of convenience, comfort, and sanitation. The authors recognizing that every agricultural region is a problem in itself, have laid a substantial groundwork in a movement for better rural housing. A thorough survey of the field was made both through personal contact and a study of available literature. There is a dearth of such material, and while building in rural sections is almost at a standstill, it is the feeling of the Committee that the "longer farmers must wait for better conditions, the more urgently they will need better houses and the technical assistance to make these dwellings comfortable, convenient, and of pleasing appearance".

The material presented is divided into six main parts, including farm and village housing conditions, design and construction, farmstead planning and beautification and painting, economic and financial aspects, some special phases and problems of farm and village housing, and educational aspects. Under these headings are included a study of farm and village houses in the United States, housing conditions and problems in part-time farming, a brief history of rural architecture in the United States, suggested standards for the farmhouse, planning the farmhouse, practical suggestions on frame house construction, house for the growing income, farmstead planning and beautification, problem and methods of financing building and improvements, relation of taxation to farm and village housing, insurance on farm and village dwellings, and a program of needed research and education on farm and village housing.



The work affords foundation for further research and should stimulate intensive, constructive work in rural housing.

"Explicit recommendations have been offered for improvement of house design, for extension of improved sanitation and for improved organization to bring their recommendations into effect. For the many phases of the subject on which they find contemporary data inadequate, they are explicit in their recommendations for further research, the need of which has been made clear."

In addition to explanatory footnotes, a list of references on rural housing is given in appendix III.



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## Agriculture.

Agricultural outlook for 1933. Prepared by the staff of the Bureau of Agricultural Economics. 1933. 99p. U. S. Department of Agriculture. Miscellaneous Publication No. 156.

Agriculture undergoing drastic readjustment. American Fertilizer. v.77, no.13. December 17, 1932. p.11, 24.

Engineer's view on "economic balance" as applied to agriculture: Editorial. By Leonard J. Fletcher. Agricultural Engineering. v.14, no.3. March, 1933. p.82-83. Agriculture today is entirely too complicated to allow entrance of very many of people now unemployed in cities. Modern agriculture demands knowledge of management and operation of machinery; ability to handle livestock, plant and cultivate variety of crops, and control ever-increasing variety of plant and animal diseases.

Extension work in agriculture and home economics. Some accomplishments in 1932. 1933. 50p. Virginia Agricultural and Mechanical College. Extension Division. Bulletin No. 132.

Geography and the farm problem. By Dr. Isaiah Bowman. Science News Letter. v.23, no.624. March 25, 1933. p. 182-183.

Some fundamental aspects of farm relief. By Horace Bowker. American Fertilizer. v.78, no.1,2. January 14, 1933. p.9-10, 20, 22, 24. January 28, 1933. p.11, 26, 28-29. Reviews briefly present condition of agriculture, outlines Export Debenture Plan of Farm Relief and Equalization Fee plan. Discussion of Voluntary Domestic Allotment Plan.

Sweeping farm relief measure offered by administration. Implement and Tractor Trade Journal. v.48, no.6. March 25, 1933. p.7. Embodies use of option allotment, rental or agreement plans and vests almost dictatorial powers in Secretary of Agriculture. Powers accorded are: (1) Provide for reduction in acreage or production of specified farm products and to compensate for such reduction. (2) Enter into marketing agreements. (3) License processors and distributing agencies engaged in interstate or foreign commerce in handling agricultural products and to regulate them. (4) Use Smith cotton option contract plan on 1933 crop. (5) Impose taxes on processing of basic agricultural commodities at amount not in excess of that necessary to restore prewar price parity. President may terminate measure whenever he finds that existing emergency to agriculture has been ended.



Agriculture. (Cont'd.)

Well planned farm business By S. B. Cleland. 1932. 16p.  
University of Minnesota. Agricultural Extension Division. Special  
Bulletin No. 155.

Air Conditioning.

Action on air conditioning nomenclature: Editorial. Heating and  
Ventilating. v.30, no.3. March 1933. p.38. Trade committee  
newly-organized in that part of air conditioning field which hopes to  
engage in merchandising.

Air conditioning for comfort. By Major M. G. Harbula. Refrigeration.  
v.53, no.3. March, 1933. p.16-20. Treating recirculated air;  
Distribution of cooled air; Difficulty of locating units; Choice of  
units and central fan plant; Characteristics of refrigerants; Steam-  
vacuum method of refrigeration.

Air conditioning for comfort and health. By Elliott Harrington.  
General Electric Review. v.36, no.4. April, 1933. p.166-176.  
Growth and development; Requirements for comfort and health; Temper-  
ance control; Humidity control; Control of air movement; Control of air  
purity; Air conditioning system; Concerning the future.

Boiler provides heat energy for this air conditioning job. By W. W.  
Hughes. Domestic Engineering. v.141, no.2. February 1933.  
p. 63-67. Description of system.

Future of air conditioning. By Harold L. Alt. Aerologist. v.9,  
no.4. April 1933. p.5-6,18. Some thoughts on development of  
field of endeavor and its application to reconstruction work.

Future of heating and air conditioning. By Willis H. Carrier. Domestic  
Engineering. v.141, no.2. February 1933. p.72,74.

Home air conditioner for combination with furnace. Popular Mechanics  
Magazine. v.59, no.1. January 1933. p.41. In operation, air-  
conditioner blowers draw air from basement which is filtered, heated,  
moisture-treated, and forced up through conventional warm air ducts  
into house. When cooled to room temperature, air returns to basement  
through grille on first floor. Blowers are of sufficient capacity to  
completely recirculate air in home five to ten times per hour during  
continuous operation.

How much does it cost to cool with ice? By A. P. Kratz and S. Konzo.  
Domestic Engineering. v.141, no.3. March 1933. p.63-65.  
Results of research conducted at University of Illinois; determination  
of cooling load and its hourly variation when cooling residence as  
whole; allocation to various rooms of heat entering residence, and  
determination of hourly variation in cooling load of individual rooms;  
determination of effectiveness of awnings as means of reducing cooling  
load. Table gives complete summary of tests.



Air Conditioning. (Cont'd.)

Ice as a factor in air conditioning costs. By Clifford F. Holske.  
Refrigerating Engineering. v.25, no.3. March 1933. p.133,160.

Temperature regulation in air cooling and conditioning. By R. C.  
Davis. Refrigerating Engineering. v.25, no.3. March, 1933.  
p.149,160.

Associations.

German Agricultural engineers organize. Agricultural Engineering.  
v.14,no.3. March 1933. p.84.

Nominations of A.S.A.E. officers. Agricultural Engineering. v.14, no.3.  
March 1933. p.84.

Belts.

Flat belt drives cut power transmission costs. Power. v.77, no.4.  
April 1933. p.139-190. Gives characteristics and design features.

Building Construction.

Aids to the construction industry. By Henry D. Hubbard. Commercial  
Standards Monthly. v.9, no.9. March 1933. p.207-209. Labor-  
atories of Bureau of Standards help to improve materials for construc-  
tion industry.

Construction by contract analyzed by U. S. Census. Engineering News  
Record. v.110, no.11. March 16, 1933. p.339-343. First com-  
plete analysis of contract construction offers wealth of information  
on organization of business, its volume and value, materials consumed  
and labor employed. Complete figures for 30,000 and estimated figures  
for 144,396 contractors. Editorial, p.356.

Increasing the capacity of framed timber joints. By F. O. Dufour.  
Engineering News Record. v.110, no.3. March 30, 1933. p.408-  
410. Special metal connectors, used extensively in Europe on  
large timber structures, are proposed for use in this country.  
Editorial, p.417.

New materials and methods in country house construction. R. W. Sherman.  
Architectural Forum. v.58, no.3. March 1933. p.225-234.  
Review of new materials for construction of framing and walls, floors,  
partitions; features of frameless steel house.

Reinforced brick columns tested at Lehigh University. By Inge Lyse.  
Engineering News Record. v.110, no.11. March 16, 1933. p.345.  
Results of first series of tests show strength varying from 2,500 to  
4,500 lb. per sq. in., reveal importance of vertical reinforcement,  
superiority of cement mortar and solid over-perforated brick, and ad-  
visability of using lateral ties.



### Concrete.

Concrete strength increased by spray irrigation. By E. H. Burrows.  
Engineering News Record. v.110, no.13. March 30, 1933.  
p.401-402. Tests made at Stony Gorge and Rodriguez dams show  
possibilities for producing higher-strength concrete by sprinkling.  
Spray system developed for Rodriguez Dam.

### Cotton.

Recent cotton ginning investigations. By Charles A. Bennett.  
Agricultural Engineering. v.14, no.3. March 1933. p.74-76.

### Drainage.

Vortex-tube and riffle-deflector sandtraps. By R. L. Parshall. 1933.  
5p. mimeographed. U. S. Bureau of Agricultural Engineering.

### Electric Service, Rural.

Rural line recommendations of New Hampshire group. Electrical World.  
v.101, no.12. March 25, 1933. p.374.

Rural service in Michigan was extended in 1932. Electrical World.  
v.101, no.12. March 25, 1933. p.372. Michigan Utilities In-  
formation Bureau reports January 1, 1933 more than 36,500 farm  
customers, increase of more than 2,250 over January 1, 1931.

Viewpoints differ on reducing farm line costs: Letter from M. J. Kelly.  
Electrical World. v.101, no.12. March 25, 1933. p.398-399.

### Electricity on the Farm.

Automatic water supply - the greatest convenience. By E. W. Lehmann.  
Electricity on the Farm. v.6, no.4. April 1933. p.6-7.  
Dependable water system essential. Well capacity determines pump  
size.

Effect of current interruption in electrical incubation. By L. W.  
Taylor, C. A. Gunns, and B. D. Moses. 1933. 19p. California.  
Agricultural Experiment Station. Bulletin no. 550.

Electric soil sterilization found promising. Electrical World.  
v.101, no.14. April 8, 1933. p.453. Discussion of National  
Rural Electric Project.

Forcing vegetables the modern way. By Maurice W. Nixon. Electricity  
on the Farm. v.6, no.4. April 1933. p.8-9, 12. Construction  
of foundation; two steps of heat desirable; construction costs; ad-  
vantages.



Electricity on the Farm. (Cont'd.)

Methods of supplying electric heat to hotbeds. By T. M. Currence.  
1932. 19p. Minnesota. Agricultural Experiment Station.  
Bulletin no. 289.

What wire shall I use? By H. J. Gallagher. Electricity on the  
Farm. v.6, no.4. April 1933. p.11-12. Relation of length  
to size; Effect of distance on current.

Engines.

Rating internal combustion engines. By P. F. Rogers. Southern  
Power Journal. v.51, no.3. March 1933. p.20-22.

Erosion Control.

Preventing canal-bank erosion on Missouri levees. Engineering News  
Record. v.110, no.14. April 6, 1933. p.429. Surface water  
is let into canals by means of corrugated pipe extending some distance  
out over slope. To prevent erosion at entrance to pipes, drop concrete  
inlet is provided.

Strip cropping to stop blowing. By George W. Morgan. Montana Farmer.  
v.20, no.12. February 15, 1933. p.3,15. Development of strip  
cropping; Good farming necessary; Somewhat more expensive.

Explosives.

Ditch blasting. Wilmington, Delaware; Hercules Powder Company. 1933.  
60p. Explains methods of handling dynamite with greatest degree of  
safety and how to secure most efficient and most satisfactory results.

Extension.

Rural extension practices. By Ben H. Nichols. Electrical World.  
v.101, no.11. March 18, 1933. p.353-355. Survey of plans and  
policies in 45 states. Regulation rules of state commissions.  
Financing plans and approvals.

Fans, Mechanical.

Fan engineering: An engineer's handbook on air, its movement and distribu-  
tion in air conditioning, combustion, conveying and other applications  
employing fans. 3d edition. Buffalo, N.Y., Buffalo Forge Co.,  
1933. 622p.



Farm Buildings and Equipment.

Kentucky standard milk house. By James B. Kelley. Agricultural Engineering. v.14, no.3. March 1933. p.76.

Structural clay tile problems. By Henry Giese. Clay Worker. v.99, no.3. March 1933. p.108-109,120. Use of hollow building tile in farm structures.

Farm Machinery and Equipment.

Apron-type thresher as designed 70 years ago. Implement Record. v.30, no.4. April 1933. p.20. Drawing reproduced in reduced size made at J. I. Case factory in 1863.

Best way to bring back better times we've seen yet. Implement Record. v.30, no.4. April 1933. p.10-11. Say Keystone and Cletrac after study of Beshers' plan. Plan in brief is for Congress to pass law providing that all petroleum products that may be used as fuel in internal combustion engines, shall be blended 10 per cent by volume with ethyl alcohol made from agricultural products grown within continental United States.

Binder knotter troubles. By G. O. Hill. 1933. 2p. Purdue University. Department of Agricultural Extension.

Case announces new lister cultivators. Farm Implement News. v.54, no.7. March 30, 1933. p.14. Used with any make of tractor. Built in five, four, and three row units. Sections straight in line, providing freedom in turning, control from tractor seat, and stability. Adapted to all listed crop cultivated needs.

Fox field hay cutter. Farm Implement News. v.54, no.8. April 13, 1933. p.22. Machine is equipped with automotive type transmission case having cut-steel gears, lever controlled, for varying length of cut. Field hay cutters consist of heavy-duty outfits built into traveling unit, motor actuated, and equipped with standard combine-type pick-up and elevator to deliver cut hay to motor trucks or wagons.

Iowa college features farm machinery repair. Better Farm Equipment and Methods. v.5, no.8. April 1933. p.4-5,18.

Making threshing a two-man job. By R. G. Harvey. Agricultural Engineering. v.14, no.3. March 1933. p.73. Blower was placed in barn with 6-inch pipe hooked up to hopper at threshing machine 132 feet away. Grain dropped into hopper and was sucked through to blower and forced up into grain bins on next floor. Pipe was made airtight at joints with heavy rubber bands. Blower was equipped with 4-inch pulley and was driven by 3 h.p. electric motor, which had 10-inch pulley, thus giving blower speed of around 3600 rpm. Outfit took care of about 2 bushels of grain per minute.



## Farm Machinery and Equipment (Cont'd).

Mower-crusher in hay making. By Frank J. Zink. Agricultural Engineering. v.14, no.3. March 1933. p.71-73. Rolling process appears to insure moisture content sufficiently low to permit placing alfalfa hay into storage same day that it is cut. Rolling process increases drying rate by stem bleeding and by increased evaporation through stem fractures. More equal drying rate of leaves and stems and should prevent leaf losses through leaves becoming overdry.

New McCormick-Deering enclosed gear mower. Implement and Tractor Trade Journal. v.48, no.5. March 11, 1933. p.22. Smoothness and efficiency of operation have been increased by application of automotive principles to old type of farm machine. Compactly grouping entire operating mechanism including drive gears, differential and counter-shafts, in one common chamber or gear case.

Power farmers make time count. By E. T. Leavitt. Farm Implement News. v.54, no.7. March 30, 1933. p.16. Tractor power now costs, per drawbar horse-power, only about half that of pre-war and third that of 1919. At present all operations, formerly classed as doubtful are commonly done with mechanical power and 28 of those classed as non-tractor operations are also being done with tractors on thousands of farms and most of remainder are practicable with farm trucks.

Two-horse tools show profit now. By A. B. Bryan. Progressive Farmer. v.48, no.3. March 1933. p.4. Making two-horse farmers out of one-horse farmers won't solve our agricultural problems, but it will go long way towards increasing volume produced per farm family with little increased cost, and at same time permit growing of feed crops so essential to livestock and diversified farming.

Useful tools for the garden. By H. P. Smith. Southern Agriculturist. v.63, no.2. February 1933. p.7.

## Floors.

Floors and flooring materials: pt.2. By David B. Emerson. Pencil Points. v.14, no.2. February 1933. p.101-104, 25. Asphalt tile floors; Linoleum; Burnt clay tile floors; Terrazzo floors; Mosaic floors; Marble floors; Soapstone floors; Flagstone floors; Magnesite floors.

## Forage Drying.

Antirachitic value of alfalfa as affected by exposure to sunshine in the curing process. By Margaret Cammack Smith and Ian A. Briggs. Journal of Agricultural Research. v.46, no.3. February 1, 1933. p.235-240.



Forage Drying (Cont'd).

Vitamin A content of alfalfa as affected by exposure to sunshine in the curing process. By Margaret Cammack Smith and Ian A. Briggs.  
Journal of Agricultural Research. v.46, no.3. February 1, 1933.  
p.229-234.

Frost Protection.

Loss of oil from orchard heaters while standing. By E. R. Parker.  
California Citrograph. v.18, no.6. April 1933. p.163,184.

Fuels.

Alcohol-gasoline fuel now on sale at Illinois co-op. stations. National Petroleum News. v.25, no.11. March 15, 1933. p.19-20. Gasoline blended with 10 per cent of alcohol sells for 3 cents gallon more than regular grade of gasoline and is colored red.

Alcohol-gasoline mixture suggested as motor fuel. Science News Letter. v.23, no.620. February 25, 1933. p.116. Mixing with dry alcohol successful, so Czechoslovakia makes dilution imperative to encourage potato industry.

Alcohol-gasoline motor fuels. By H. I. Shoemaker. Sugar News. v.13, no.10. October 1932. p.676-681.

Alcohol mixing bills would make motorists pay for corn price rise. By Joseph Geschelin. Automotive Industries. v.68, no.13. April 1, 1933. p.404-406,408. Even two and three per cent additions now proposed would make resulting fuel cost more than gasoline. Solution of farm problem lies not in forceful substitution of agricultural products where non-agricultural products serve better as means of absorbing surplus farm production, but in adjustment of farm output to available markets. Alcohol mixing proposals are expedients which will not encourage this adjustment.

Comment on the gasoline-alcohol fuel project. Farm Implement News. v.54, no.6. March 16, 1933. p.12-13.

Domestic uses of gas. By Alfred E. Forstall. Scranton, Pa., International Textbook Company. 1932. 82p. Domestic uses of manufactured gas, p.1-68. Domestic use of natural gas, p.1-82.

Fuel oil for tractors? Arizona Producer. v.12, no.2. April 1, 1933. p.5. Mesa farmer finds it gives him more power at much less cost than gasoline.

Fuel oil specifications. By A. J. Kraemer. Domestic Engineering. v.141, no.3. March 1933. p.60,67-68.



## Fuels. (Cont'd)

Gasoline-alcohol fuel tests. By C. C. Crane. Farm Implement News. v.54, no.6. March 16, 1933. p.13.

Heavy fuel developments. Farm Implement News. v.54, no.8. April 13, 1933. p.21. New types employ spark ignition, compressions lower than self-ignition pressures of Diesels, but some with fuel injection remotely similar to that of Diesel. Chief operating difference between these new engines and those with which this trade is familiar, which will operate on fuels practically as heavy, is that new engines will start on fuel oil while heavy-fuel tractor engines other than Diesels have to start on gasoline and then switch to heavier oil.

Is alcoholic fuel the answer? Implement and Tractor Trade Journal. v.48, no.7. April 8, 1933. p.8,20. Some official approval; Effect on carburetors; More production is needed.

Subsidy by motorists for relief of farmers: Editorial. National Petroleum News. v.25, no.8. February 22, 1933. p.13-14. More to proposal to compel sale of alcohol in motor fuel. Radical change in nature and characteristics of motor fuel is contemplated in plan to blend 10 per cent of farm alcohol, with straight motor gasoline. Would necessitate mechanical changes in carburetors to give efficient and satisfactory performance.

Use of grain alcohol in motor fuel involves many difficulties. National Petroleum News. v.25, no.4. January 25, 1933. p.25. 1. Low mileage. 2. Alcohol blends cannot be used interchangeably with straight gasoline. Necessary to redesign carburetor. 3. Alcohol mixtures are hard starting in winter climates. 4. Tendency to separate into two layers of widely different characteristics.

## Greenhouses.

Small sash house for growing vegetable plants. By O. E. Robey and C. H. Mahoney. 1933. 8p. Michigan College of Agriculture and Applied Science. Extension Division. Extension Bulletin no. 130.

## Heat Conduction.

Thermal conductivity of liquids. By Oscar Kenneth Bates. Industrial and Engineering Chemistry. v.25, no.4. April 1933. p.431-437. New apparatus, designed for determination of true and average coefficients of thermal conductivity and temperature coefficients of thermal conductivity of liquids over temperature range by means of single test, is described. Results: 1. Determines with accuracy several thermal coefficients mentioned; 2. Convection present in liquid between horizontal plates at different temperatures, suitably heated and properly guarded, is negligible in so far as transmission of heat is concerned through liquid; 3. Surface effect is present at interface of stationary liquid and solid during transmission of heat normal to interface.

## Heating.

Effect of cold walls studied at Pittsburgh. Heating and Ventilating. v.30, no.3. March 1933. p.40. Conclusions: 1. Increased radiation of heat from occupants in room to cold walls on three sides is shown to require higher air temperature for same feeling of warmth. 2. In cold wall room observed temperatures by mercury thermometers may vary depending on whether bulb is shielded from or exposed to view of cold walls and of occupants. 3. Walls of large area having considerably lower temperature than surrounding air gives feeling of discomfort to occupants seated nearby due to resulting feeling of coldness in those parts of body exposed to cold walls, even though room air-temperature is high enough to give over-all sense of not being cold.

How to select the right oil burners. By H. J. Klotz. Power. v.77, no.4. April 1933. p.212.

Room heated by wall paper with electric element. Popular Mechanics Magazine. v.59, no.1. January 1933. p.57. Device consists of thin sheet of insulating material through which run electrical heating elements connected to power source. Attached to ceiling, heater is switched on automatically when temperature of room falls below predetermined point.

Science reverses refrigeration cycle and gives us...the heat pump! By C. D. Graham and G. Wilkes. Domestic Engineering. v.141, no.3. March 1933. p.55-56, 59, 65. Heating buildings by means of reversed refrigeration cycle; latest developments in field of heating and cooling through use of refrigeration equipment; test installations by Westinghouse Electric and Manufacturing Co., in existing homes under actual operating conditions; diagram showing heat pump arranged for heating or cooling and humidifying.

Some observations on heating practice. By James Govan. Heating, Piping and Air Conditioning. v.4, no.11. November 1932. p.764-769.

When walls are warm, seventy is as comfortable as 78.9. By F. C. Houghten and Paul McDermott. Domestic Engineering. v.141, no.2. February 1933. p.36-38, 114. Since 1920, series of investigations of cold walls and their relation to feeling of warmth has been carried on by American Society of Heating and Ventilating Engineers research laboratory. Article consists of excerpts from paper presented at Cincinnati meeting.

## Hitches.

Big team hitches reduce costs. By R. R. Thalman. Successful Farming. v.31, no.4. April 1933. p.12, 38-39.



Houses.

American home in the 1930 census. Housing. v.21, no.4. December 1932. p.277-280. Of 13,503,386 owned non-farm homes in United States, median value is \$4778 - 18.1% being valued under \$2000; 33.4% between \$2000 and \$5000; 31.3% from \$5000 to \$16,000; and 15.2% \$16,000 or over.

Architect and small house costs. By Henry Wright. Architectural Record. v.72, no.6. December 1932. p.389-394. Application of cost data to problems of community planning. Cost and space comparisons.

Canvas for houses. Architectural Forum. v.57, no.6. December 1932. p.26. Waterproofed and fireproofed canvas is recent development in search for new materials for low cost houses. Walls and roof decking are of ordinary wood frame construction, with studs on 6 inch centers, aluminum foil for insulation in wall thickness, and treated canvas stretched over standard 3/4 inch wood sheathing. Interior walls are canvas covered, and collapsible partitions are used for division of space.

Cornerless houses have invisible supports. Popular Mechanics Magazine. v.59, no.1. January 1933. p.40. Two types: 1. Outer walls hang curtainlike from eaves; 2. Balanced on bracket or cantilever. Outside walls mostly glass.

Factory-made house is not such a bogey man. Brick and Clay Record. v.82, no.3. March 1933. p.100,102,104. Fabricated house still remains a dream. Obstacles: 1. Not easily shipped. 2. Size of families not standardized. 3. So many designs that manufacturer has to make so many models he cannot achieve economical production. 3. Climatic and other local conditions are important factors in house design. 4. Union labor. 5. Made without cellars.

Comparative details - Group 5 Fireplaces. Pencil Points. v.14, no.2. February 1933. p.85-89.

Frameless steel house offers better home. Popular Mechanics Magazine. v.59, no.1. January 1933. p.62-63.

House all of glass. Housing. v.21, no.4. December 1932. p.249-250. Outside walls made of non-transparent glass slabs 3 inches thick, set in large metal frames, tied together and all fastened to steel skeleton of building. Cost slightly higher than ordinary house.

One-family house exposition at Vienna: Colony of "sample houses." Housing. v.21, no.4. December 1932. p.267-271.

## Hydraulics.

Hydraulic proceedings. Short summaries of articles. Royal Hungarian Ministry of Agriculture. 1932 - II. Policy and organization of hydraulic affairs in Austria, by Istvan Zauner. Tisza Valley, hydrographic description and enumeration of river improvement works, by Waldemar Laszloffy. Protection of overflow dams against erosion, by Dr. Jozsef Einwachter. Agricultural engineering activity in Czechoslovakia, by Leo Vas. Latest form of the Bear Trap dam, by Jozsef Mantuano.

Report on current hydraulic laboratory research in the United States. April 1, 1933. 34p. mimeographed. Compiled by Bureau of Standards.

## Insulation.

Insulating data. By Ezer Griffiths. Ice and Cold Storage. v. 36, no.420. March 1933. p.42. Survey of characteristic properties of available materials.

Metal foil gives board better insulation. Popular Mechanics Magazine. v.59, no.1. January 1933. p.57. Tests with sample of 3/8 in. thickness demonstrated that addition of foil provided resistance to temperature change equaling that of extra half inch of standard fiberboard.

Thermal insulation with aluminum foil. By Ralph B. Mason. Industrial and Engineering Chemistry. v.25, no.3. March 1933. p.245-255. Thermal insulation with metal is made possible by taking advantage of low thermal emissivity of aluminum foil and low thermal conductivity of air. Various factors determining efficiency of aluminum foil-air cell insulation are analyzed, and insulation values of variety of structures determined experimentally in guarded hot plate apparatus or cold box apparatus. Aluminum foil-air cell insulations of plain air-cell type are found to be better than structures with corrugated separators or crumpled foil. Best results are obtained when distance between foils is from 0.25 to 0.33 inch (0.64 to 0.84 cm). Light weight of aluminum foil-air cell insulation and its excellent insulation properties make it especially suitable for use in transportation industry.

Waste made into insulation at low cost. Popular Mechanics Magazine. v.59, no.1. January 1933. Sawdust and coal ashes held together by special bonding fluid. Can be cast in any thickness or shape to suit conditions.

## Irrigation.

Advice on irrigation. Australian Sugar Journal. v.24, no.11. February 9, 1933. p.577-579. Methods of irrigating: Flooding, furrow irrigation, check irrigation, border method.



Irrigation. (Cont'd.)

Canvas hose irrigation: Editorial. Farm Implement News. v.54, no.8. April 13, 1933. p.12. Large hose of ordinary canvas, with one end sewed up. Water pumped into other end. Moderate pressure in hose caused water to seep out along whole length.

Cultivation in relation to plow pan and irrigation. By H. J. Wilder. California Citrograph. v.18, no.6. April 1933. p.174. When necessary to work soil, do so only when individual soil is of such moisture content that it leaves bottoms of disks, or plow, or cultivator teeth, in crumbly condition.

Irrigation bonds. Arizona Producer. v.12, no.2. April 1, 1933. p.8. Districts may now refinance and buy own securities to reduce debt according to bill recently passed by Arizona legislature.

Irrigation of horticultural community settlements: Notes for the guidance of advisory boards in Murray Valley settlements. By A. V. Lyon Melbourne, 1932. 22p. Australia. Council for Scientific and Industrial Research. Pamphlet no. 26. Investigations and general observations over wide range of conditions indicate that present irrigation practice in Murray Valley undoubtedly results in waste of water with its attendant possibility of salt and seepage troubles. Preliminary data are presented to indicate nature of major contributing factors, and suggestions are made regarding initiation of corrective measures.

Modern irrigation methods traced to ancient practices. California Citrograph. v.18, no.6. April 1933. p.77. However ancients have given us practically no knowledge of basic principles of soil moisture and plant development and little in way of economics of problems related to irrigation. Practically all knowledge available on these phases has been gained during last century.

New water source boom to irrigation. Idaho Farmer. v.51, no.4. January 26, 1933. p.2. Big Wood project in Lincoln, Gooding and Blaine counties, Idaho. Project has approximately 115,000 acres, of which 60,000 to 70,000 has been irrigated in recent years. 39,000 additional acres will become irrigable when new system of laterals is completed within next few years.

Orchardists make "rain". Washington Farmer. v.68, no.6. February 23, 1933. p.9. Sprinkler method receives much study. Results: 1. Water applied more uniformly regardless of soil type or degree of slope. 2. Excellent moisture conditions provided for germination and growth of new cover crop. 3. Most likely to be economically successful on light, sandy hillside soils where natural head of water is sufficient to avoid use of booster pumps.

Land

Developing a satisfactory land-utilization policy. By F. D. Farrell.  
Extension Service Review. v.4, no.2. March 1933. p.17-18.  
Common welfare; Taxes; National interests.

Land-conservation camp plan and the Tennessee river basin. By S. T.  
Henry and Irvin Foos. Engineering News Record. v.110, no.14.  
April 6, 1933. p.425-429. Main features of plan for unemploy-  
ment-relief camps in federal forest reserves and survey of area most  
prominently discussed as scene of great experiment in regional planning.

Proceedings of the New Jersey Land Use Conference, held at New Brunswick,  
New Jersey. December 21, 1932. 1933. 78p. New Jersey.  
Agricultural Experiment Station. Bulletin no. 552.

Miscellaneous.

American inch. By Samuel Russell. Mechanical Engineering. v.55,  
no.3. March 1933. p.177-179.

American Society of Heating and Ventilating Engineers Guide, 1933.  
1933. 767p. Contains reference data on design and specification  
of heating and ventilating systems, manufacturers' catalog data section  
containing essential and reliable information concerning modern equip-  
ment.

Annual report for the fiscal year ending June 30, 1932. 1933. 218p.  
Florida. Agricultural Experiment Station.

Bored with the Board. By Owen P. White. Country Home. v.56,  
no.12. December 1932. p.12-14, 34-35. Discussion of Federal  
Farm Board policies.

Budget fetish and public works: Editorial. Pencil Points. v.14,  
no.2. February 1933. p.61. Our problem is to organize and  
stimulate consumption.

Constructive municipal economy vs. indiscriminate reduction of expenditures.  
American City. v.47, no.6. December 1932. p.47-48. Abstract  
of report of National Municipal League's committee on constructive  
economy in state and local government.

Fortieth annual report, July 1, 1931 to June 30, 1932. 1933. 77p.  
Minnesota. Agricultural Experiment Station. Agricultural engineer-  
ing projects, p.40-42.

Household management and kitchens. Edited by John M. Gries and James  
Ford. Washington, D. C., 1932. 228p. President's Conference  
on Home Building and Home Ownership. v.9. Part I: Household  
management. Part II. Kitchens and other work centers.



Miscellaneous. (Cont'd).

Machines not cause of our trouble: Editorial. Southern Agriculturist. v.63, no.2. February 1933. p.3. Article in "Iron Age" states that in 1889 there were 69 laborers employed per 1,000 population in intensely mechanized manufacturing industries. In 1929, there were employed in same section  $72\frac{1}{2}$  laborers per 1,000. Further compilations showed that in all gainful occupations, including agriculture, there were 383 bread winners per 1,000 population in 1900, and 398 in 1929. There is plenty of trouble, but giving up machine and reverting to hand methods of production is not solution. Disease is economic and social and not mechanical.

Report for the year ended 30th September 1932. 1933. 20p.  
University of Oxford. Institute for research in agricultural engineering.

Sixth and seventh annual reports of Connecticut State Department of Agriculture, ending June 30, 1931 and June 30, 1932. 1933. 111p.  
Rural Electrification, p.16-18.

Stages of the Mississippi River and of its principal tributaries for 1931. Compiled at Office of President, Mississippi River Commission. Vicksburg, Miss. 1933. 93p.

Triangulating the content of North America. By William Bowie. Engineering News Record. v.110, no.3. March 30, 1933. p.405-406. Precise surveys of United States, begun in 1816, have been extended into Canada and Mexico and now form series of triangle chains 46,000 miles long all referenced to Meades Ranch Station in Kansas. Editorial, p.417.

Moisture.

Conserve moisture at all times. By E. R. Parsons. Western Farm Life. v.35, no.2. February 15, 1933. p.6,12. Early spring disking prevents loss. Terracing practical method of getting water into soil.

Motors.

Care and maintenance of electric motors. By W. H. Tucker. Cotton Ginners' Journal. v.4, no.6. March 1933. p.9-10,16.

Grinding and elevating grain with one-half H.P. motor. By H. J. Gallagher. 1933. 6p. Michigan State College of Agriculture and Applied Science. Extension Division. Extension Bulletin no. 129.

Trouble shooting on electric motors. By B. W. Faber. Farm Implement News. v.54, no.7. March 30, 1933. p.18-19.

### Pipes and Piping.

Pipe design made easy by a new system of charts. By E. A. Wert,  
S. Smith and E. T. Cope. Power. v.77, no.4. April 1933.  
p.198-199.

### Plows and Plowing.

Electric ploughing. By H. Morrell Wright. Rural Electrification  
and Electro-Farming. v.8, no.94. March 1933. p.298-299.  
Table gives costs per acre for ploughing including fuel, labour,  
repairs, depreciation and interest.

### Poultry.

Analysis of poultry brooding tests, 1931 and 1932. By J. P. Schaenzer.  
1933. 5p. multigraphed. Wisconsin. College of Agriculture.  
Agricultural Engineering Department.

Heat production of poultry under housing conditions. By Henry Giese  
and Frank J. McCormick. Agricultural Engineering. v.14, no.3.  
March 1933. p.67-70. Heat production is influenced by thermal  
characteristic (C) of pen or house, and by outside temperature (t),  
heat production increasing with increase in C or decrease in t. It  
is believed that thermal characteristic may be closely approximated  
for any given pen or house, and thus heat which is required of birds  
can be estimated for outside temperature within range of studies.

### Power.

Tractors, horses, mules, oxen: Editorial. Farm Implement News.  
4.54, no.6. March 16, 1933. p.10. There are places, and  
many of them, for each variety of farm power.

Trend to power to continue. By E. T. Leavitt. Implement and  
Tractor Trade Journal. v.48, no.5. March 11, 1933. p.10.  
Ratio of decrease in animal power use in 1932 is constant with  
previous years, government livestock reports show.

### Pumps and Pumping.

Electric control of motor-driven pumps. By Samuel R. Lewis.  
Heating, Piping and Air Conditioning. v.4, no.11. November  
1932. p.713-716. Control for the heating system vacuum pumps;  
Protecting and controlling boiler-feed pump; Float control and  
starters for sump pumps; 40 h.p. motors have starters of compensator  
type; Controls for synchronous motors; Manual push-button switches  
for circulating pumps; Separate circuit breaker for fire-pump motor.

Vacuum producers for priming centrifugal pumps. Power. v.77, no.4.  
April 1933. p.180-182. Considers use of vacuum-producing  
devices separate from pumps.



## Reclamation.

Reclaiming Tennessee lands. By R. S. Maddox. American Forests. v.39, no.4. April 1933. p.148-150,173. How reforestation can contribute to the reconstruction of eroded soils in the Tennessee Valley.

Reclamation project plants net \$400,166 last year. Electrical World. v.101, no.10. March 11, 1933. p.313. Operated by U. S. Bureau of Reclamation. Twenty hydro-electric power plants on eleven of 29 federal reclamation projects were in operation during fiscal year 1931-32. These plants have total installed generator capacity of 102,550 kw., and they generated 331,793,500 kwh of energy, of which 21 per cent was utilized for irrigation and drainage pumping, 65.4 per cent was sold for commercial and industrial uses and remainder, or 13.6 per cent, was used for miscellaneous purposes and consumed by losses.

## Refrigeration.

Advancing railway refrigerating technique. By W. H. Glossop. Ice and Cold Storage. v.36, no.420. March 1933. p.44-46. Rolling stock and cooling system problems investigated. Experiments conducted by L. M. S. railway.

Methyl chloride as a refrigerant. Ice and Cold Storage. v.36, nos 419,420. February and March, 1933. p.30-31,47-49. Some information concerning its physical and thermal properties.

New refrigerator car promotes handling of small perishable shipments. Ice and Refrigeration. v.84, no.2. February 1933. p.129. New car is 22 feet one inch over all with capacity of 20,000 lbs. Only four wheels and weighs 27,000 lbs. Wood fillers, bolted to vertical Z-section posts, serve as foundation for inside lining, made of 1/4 inch masonite, tempered pressed-wood product. Six 2-7/8 inch by 3 inch longitudinal floor supports rest on underframe and to them are bolted 2-1/2 inch by 5 inch floor stringers which extend crosswise of car at intervals, rather than lengthwise. This arrangement of cross-floor stringers holds 5 inches of Dry Zero floor insulation in place without tacking. Above and below floor cross stringers are placed two layers of 1/8 inch masonite, between which are five layers of Minwax. This Minwax is applied with lapped joints and extends from belt rail, 30 inches above floor on each side and over wall pans to point about 40 inches above floor at ends. Side insulation consists of two layers of 2-1/2 inches Dry Zero, first layer fitting between posts, and second, in one piece, covering posts. Rounded roof, of 3/32 inch steel, rests on wood carlines bolted to Z-angle steel roof trusses.

## Research.

Report of the committee on research for 1932. Heating, Piping and Air Conditioning. v.5, no.3. March 1933. p.165-168.



Research. (Cont'd).

Research in the federal Department of Agriculture: Editorial. Experiment Station Record. v.68, no.3. March 1933. p.285-287. Less than 6% of total expenditures during fiscal year ended June 30, 1932 was used for its research activities. 69% expended or obligated for road construction, 3.53% for emergency farm relief loans, 5.23% payments to states for support of agricultural experiment stations, extension, and cooperative forestry projects, and 11.87% devoted to regulatory and other enforcement work, forest and game conservation, weather service and similar undertakings. Reveals that Department of Agriculture, instead of operating for exclusive advantage of farmers, carries on most of its activities for benefit of general public.

Rope.

Rope tests reported. Wisconsin Agriculturist. v.60, no.5. March 4, 1933. p.13. University of Minnesota tests.

Spraying and Dusting.

Recent developments in stationary spray systems in West Virginia. By F. D. Cornell, Jr. Agricultural Engineering. v.14, no.3. March 1933. p.79-80.

Steam.

New equation relating the pressure and temperature of saturated steam. Mechanical Engineering. v.55, no.3. March 1933. p.176.

Recent steam research in Europe. By Joseph H. Keenan. Mechanical Engineering. v.55, no.3. March 1933. p.172-176. Czechoslovakia, Germany.

Terracing.

Terracing Texas. Extension Service Review. v.4, no.2. March 1933. p.23. Terracing in Texas is now going ahead at rate of 1,000,000 acres each year.

Tractors.

Boilers and tractors: Editorial. Farm Implement News. v.54, no.8. April 13, 1933. p.12. Time to use tractor is when horses cannot handle job, which applies whether or not farmer is maintaining surplus of horses in view of capacity of tractor.

Valves.

Magnetically actuated spray valves motor fuel. By P. M. Heldt. Automotive Industries. v.69, no.9. March 4, 1933. p.280-282, 299. With Atlasco equipment low grade fuel can be burned in engines designed for gasoline.



## Valves (Cont'd).

Valve problems and recent developments. By A. T. Colwell. Agricultural Engineering. v.14, no.3. March 1933. p.77-78,86. Progress is being made in development work on valves for farm tractor engines, as well as other automotive engines. This is proceeding along two lines, namely, to improve performance of steels now known, and to develop other steels. No one steel has all requirements of perfect valve steel, although these requirements can be found individually in different steels.

## Walls.

Demountable walls for power plant construction. Power Plant Engineering. v.37, no.4. April 1933. p.172. One used for study consists of hollow wall about 5 inches in thickness, inner and outer surfaces of which are 18 ga. aluminum sheets. These are attached to and supported by aluminum girt and stud system. This system is incorporated into wall and is attached by brackets to steel framework of building. Period required for erection much reduced below that required for laying up masonry. Labor costs less; alterations simplified.

Leaky brick walls and how to prevent them. By John H. Mallon. Architectural Record. v.72, no.6. December 1932. p.412-416, 32,34. Table gives results of moisture penetration tests.

Protective coverings for rammed earth walls. By Ralph L. Patty. Agricultural Engineering. v.14, no.3. March 1933. p.70. Experiments carried on at South Dakota State College indicate that protective covering is advisable for walls in all cases and that for many soils covering is absolutely essential.

## Water Heating.

Electric water heater campaign. Hydro-Electric Power Commission of Ontario. Bulletin. v.20, no.3. March 1933. p.89-94. Selection of heater sizes; Type and application of electric heaters.

Will a firepot coil give enough heat for hot water radiation. Domestic Engineering. v.141, no.2. February 1933. p.41. Recent tests conducted at Purdue University to determine just what firepot coil will do by way of heating water. Also effect of such coil on fire itself was investigated.

## Water Supply.

Suggested principles of State legislation relating to the use of underground waters. 1933. 9p mimeographed. National Land Use Planning Committee and National Advisory and Legislative Committee on Land Use. Washington, D.C. Publication No. III.



Water Supply. (Cont'd).

Surface water supply of the United States: 1931. Part I, North Atlantic slope drainage basins. Washington, U. S. Government Printing Office. 1933. 310p.

Windmills.

Making the wind cut farm costs. Implement and Tractor Trade Journal. v.48, no.7. April 3, 1933. p.12,24. Windmills can contribute to reduction of operating expense by providing ample water supply with but little investment.

Wood.

Learning how to make posts last longer. Oregon Farmer. v.56, no.7. March 9, 1933. p.3. Experiments carried on at Oregon State College School of Forestry.

Specific gravity and related properties of softwood lumber. By Edward C. Peck. 1933. 24p. U. S. Department of Agriculture. Technical Bulletin no. 343.

When pine was king. By James MacGillivray. American Forests. v.39, no.4. April 1933. p.151-154, 184-185. Discussion of lumbering in the old days.

Wood as fuel. By Louis W. Rees. 1932. 12p. University of Minnesota. Agricultural Extension Division. Special Bulletin no. 158. Harvesting and using the slack season crop.

Wood made of cornstalks used in furniture. Popular Mechanics Magazine. v.59, no.2. February 1933. p.201. Experiments carried on at Iowa State College. Any natural wood can be imitated in corn stalk product. All types, ranging down to synthetic cork, have been manufactured.

Wood's challenge! By Axel H. Orholm. American Forests. v.39, no.4. April 1933. p.166-168. Boom to forest values is promised by development of new joint which opens large field for utilization of wood in structural building in America.